INTERNATIONAL JOURNAL OF TRANSGENDERISM
2019, VOL. 20, NO. 4, 388–402
https://doi.org/10.1080/15532739.2019.1617217

Taylor & Francis
Taylor & Francis Group

Sexual health, transition-related risk behavior and need for health care among transgender sex workers

Judith Van Schuylenbergh[a], Joz Motmans[a,b], Justine Defreyne[a,c], Anna Somers[b] and Guy T'Sjoen[a,c]

[a]Centre for Sexology and Gender, Ghent University Hospital, Ghent, Belgium; [b]Department of Languages and Cultures, Ghent University, Ghent, Belgium; [c]Department of Endocrinology, Ghent University Hospital, Ghent, Belgium

ABSTRACT

Background: Research has shown that sexual risk behavior, as well as transition-related risk behavior, such as uncontrolled hormone use, auto-medication, and silicone injections, may lead to several adverse health outcomes for transgender persons. Transgender sex workers are a vulnerable group within the transgender population, who are at increased risk for these health risk behaviors. However, European research into this topic and risk population remains largely absent.

Aim: This study explores the prevalence of uncontrolled gender-affirming hormone use, silicone injections, and inconsistent condom use among transgender sex workers working in Antwerp, Belgium.

Methods: A descriptive analysis of a survey sample of 46 transgender sex workers, supplemented with nine in-depth interviews with transgender sex workers.

Results: This population of transgender sex workers has specific socio-demographic characteristics: they are all assigned male at birth, 83% identifies as female and 76% is from Latin-American descent, mainly from Ecuador. Transition-related and sexual risk behaviors are prevalent. Current uncontrolled hormone use rate is 32%, which should be seen in light of their work as well as their migration status. Inconsistent condom use with clients is reported by 33% of the sample. Of all participants, 65% has silicone injections in one or more parts of the body, and 43% of them cites health problems due to these injections.

Conclusion: The specific characteristics of this largely invisible but highly vulnerable population should be taken in account when addressing this population's health risk behavior. Access to health care and social services should be ensured, and culturally tailored health interventions that take into account their social context as well as their gender identity should be developed.

KEYWORDS

hormone use; sex work; sexual health; silicone injections; transgender; risk behavior

Introduction

Research indicates that HIV prevalence and sexual risk behavior are estimated to be high for transgender persons. Especially among transgender women, who were assigned male at birth but identify more on the female spectrum, HIV rates appear to be high: a systematic review based on 39 studies calculated a global HIV prevalence rate of 19.1% for transgender women (Baral et al., 2013). In the USA, a meta-analysis of 29 studies showed that 27.7% of all transgender women in the study samples included tested HIV positive (Herbst et al., 2008). For transgender women of color in the USA, HIV prevalence is estimated higher than for white transgender women (Garofalo, Deleon, Osmer, Doll, & Harper, 2006; Herbst et al., 2008; Nuttbrock et al., 2009). Sexual risk behaviors such as inconsistent condom use with primary as well as non-primary or commercial partners or sex in serodiscordant relationships are frequently reported among transgender populations (Guadamuz et al., 2011; Nemoto et al., 2012; Operario, Nemoto, Iwamoto, & Moore, 2011; Sausa, Keatley, & Operario, 2007; Wilson et al., 2009). However, some transgender persons also engage in other kinds of health risk behavior. Studies cite for instance uncontrolled gender-affirming hormone use and auto-medication in transgender women, as in transgender men (Clements-Nolle,

CONTACT Judith Van Schuylenbergh judith.vanschuylenbergh@ugent.be Centre for Sexology and Gender, Ghent University Hospital, C. Heymanslaan 10, 9000 Ghent, Belgium.

Marx, Guzman, & Katz, 2001; Garofalo et al., 2006; Mepham, Bouman, Arcelus, Hayter, & Wylie, 2014; Rotondi et al., 2013; Sanchez, Sanchez, & Danoff, 2009). A Canadian study about "DIY transitions" (do-it-yourself transitions including non-prescribed hormone use and self-performed surgeries) shows that 25% of their sample of transgender persons ($N = 433$) have used non-prescribed hormones (Rotondi et al., 2013). These hormones are sometimes obtained via friends, street vendors or through the internet (Mepham et al., 2014; Rotondi et al., 2013; Sanchez et al., 2009). Hormone use without medical supervision greatly increases the risk of adverse health outcomes (Meriggiola & Gava, 2015). The use of silicone injections or "fillers" could be seen as another form of transition-related risk behavior. Some transgender women use these as an alternative for plastic surgery to attain what they consider to be a more feminine body (Wilson, Rapues, Jin, & Raymond, 2014). Silicone injections do not come without risk: complications such as inflammation or migration and deformation of the silicones can occur immediately after the injection, but also years later (Chasan, 2007; Styperek, Bayers, Beer, & Beer, 2013). As such, the use of silicone injections to achieve a more feminine shape is discouraged by transgender health care specialists (Ettner, Monstrey, & Coleman, 2016). Because of the relatively low cost compared to standard options for transition (e.g., breast augmentation) these are particularly popular within some subgroups of transgender persons, such as adolescents and sex workers (Styperek et al., 2013; Wallace, 2010). Indeed, for some transgender persons, gender-affirming healthcare is unavailable, difficult to access or impossible to afford (Winter et al., 2016), which may lead them to looking for alternatives from the standard transition options that are described in international guidelines such as the Endocrine Society Clinical Practice Guideline for endocrine treatment of gender-dysphoric/gender-incongruent persons (Hembree et al., 2017) and the World Professional Association for Transgender Health (WPATH) Standards of Care (Coleman et al., 2012).

Studies have demonstrated that transgender women are disproportionally represented in the sex industry (Logie et al., 2017; Nuttbrock & Hwahng, 2017; Wilson et al., 2009). The involvement of transgender women in sex work is mostly attributed to discrimination, stigmatization, and transphobia (Crosby & Pitts, 2007; Nadal, Davidoff, & Fujii-Doe, 2014; Sausa et al., 2007). Transgender persons frequently face discrimination on the labor and housing market, which may lead to economic marginalization and in turn facilitate engagement in sex work. Especially for transgender women of color, who face even more discrimination on the labor market, as well as a double eroticization of their bodies (being trans as well as being exotic), engagement in the sex industry is estimated to be high (Logie, James, Tharao, & Loutfy, 2011; Nuttbrock & Hwahng, 2017; Sausa et al., 2007).

Transgender sex workers are a population at high risk for adverse health outcomes (Harcourt, van Beek, Heslop, McMahon, & Donovan, 2001). For instance, HIV prevalence among transgender sex workers has been estimated much higher than among transgender women not engaged in sex work (Operario, Soma, & Underhill, 2008). Moreover, an US-based study showed that transgender women who had ever used gender-affirming hormones without medical supervision were also more likely to be engaged in sex work, face financial hardship, and have no health insurance (Nuttbrock et al., 2014). Because of the financial hardship they frequently face, transition-related risk behavior might indeed be more prevalent within populations of transgender sex workers. However, European research on transgender sex work and health risk behavior is scarce, and non-existent when it comes to uncontrolled hormone use and silicone injections (Van Schuylenbergh, Motmans, & Coene, 2018). Most of the studies that involve transgender sex workers are conducted in large urban areas in North-America, such as New York and San Francisco, or Asian countries (e.g., India, Pakistan, Indonesia, Thailand). There have been some recent European studies involving transgender sex workers in Italy (Botti & D'Ippoliti, 2017), Spain (Ballester-Arnal, Bergero-Miguel, Gil-Llario, Guzman-Parra, & Castro-Calvo, 2018), and Portugal (Gama, Martins, Mendao, Barros, & Dias, 2018). These studies show that HIV risk behaviors are indeed common among transgender sex

workers (Gama et al., 2018), as well as substance abuse (Ballester-Arnal et al., 2018). Transgender sex workers also appear to experience more discrimination and exclusion compared to transgender persons not involved in sex work (Ballester-Arnal et al., 2018; Botti & D'Ippoliti, 2017). However, social contexts for transgender persons as well as for sex workers differ greatly globally, and even within Europe (ILGA Europe, 2018; Weitzer, 2017). Reports from the European Network for HIV/STI Prevention and Health Promotion among Migrant Sex Workers (TAMPEP) indicate that the proportion of transgender sex workers is highest in Western-European countries like Belgium, Luxembourg, France, Greece, and Italy, estimated at 15–25% of the overall (male, female, and transgender) sex worker population, compared to a maximum of 5% in the overall sex worker populations in other European regions, which could be attributed to the longstanding presence of transgender communities and the possibilities with regard to gender affirmative processes in Western Europe (TAMPEP, 2009). TAMPEP estimates that 70% of all transgender sex workers working in the Western European sex industry are migrants, which makes them even more vulnerable to health risks. However, transition-related health risk behavior within this vulnerable population of transgender sex workers has not yet been studied. Therefore, this study aims at exploring uncontrolled hormone use and silicone injections as well as sexual risk behavior in a population of transgender sex workers working in Antwerp, Belgium. The city of Antwerp has a close concentration of window-based prostitution that was historically developed alongside the Antwerp harbor, which expanded increasingly towards the end of the 19th century and as such created a high demand for sex workers (De Koster, 2017). In Belgium, third-party involvement in prostitution is illegal, but not prostitution itself, although some local governments tolerate third-party involvement. Antwerp has a red light district ('Schipperskwartier') that is segregated from the rest of the city and is highly regulated and well-monitored, with a police station and a health service center for sex workers located inside (Weitzer, 2014). In Antwerp, transgender sex workers are present in window prostitution, whereas in red light districts in other Belgian cities, like Brussels or Ghent, this is not the case. Although health care services for sex workers are present and easily accessible in the Antwerp red light district, transition-related risk behavior and sexual risk behavior of this subpopulation of sex workers, as well as their need for healthcare remain unknown. As such the nature of this study is descriptive and exploratory, aiming at providing first insights in the risk behavior of transgender sex workers in Belgium.

Method

Context and sample

The authors opted for a face-to-face survey method in close co-operation with two outreach organizations providing healthcare and assistance for sex workers that are located in or nearby the red light district. Conducting research with transgender persons as well as with sex workers might be particularly challenging (Benoit, Jansson, Millar, & Phillips, 2005; Sanders, 2006a; Shaver, 2005), and as such working with organizations in the field is crucial. Therefore, one trained Spanish-speaking peer expert identifying as gender variant, who had been working in the Antwerp sex industry before getting involved with the outreach organization and held close contact with the transgender sex worker population working in the Antwerp red light district, was included as part of the research team. Their role was essential in gaining access to this hard-to-reach population. For the outreach organizations, the primary focus of the study was to explore the use of gender-affirming hormones in the population of transgender sex workers reached by them, in order to develop an intervention aiming at harm reduction of uncontrolled hormone use. Because of this primary focus on hormone use, ever having used gender-affirming hormones was required to participate in the study.

The face-to-face survey was supplemented afterwards by in-depth interviews with transgender sex workers working at the red light district in Antwerp. The in-depth interviews were part of a larger study looking in the lives and discourses of transgender sex workers in Antwerp, but only data related to hormone use and risk

behavior was used for this article, to supplement the initial findings resulting from the survey.

Data collection

Participants were recruited by the two outreach organizations between January and June 2017. Structured face-to-face survey interviews were conducted in person by three Spanish-speaking social workers of the outreach organizations, as well as the peer expert, who contacted possible participants during their outreach work in and around the red light district in Antwerp. Because most transgender sex workers were at work during outreach, usually an appointment was made for the survey interview, and the actual interview was conducted by the social workers or the peer expert later on in one of the locations of the outreach organizations. After the survey data collection and analysis, additional in-depth interviews with transgender sex workers were conducted by one of the researchers (A.S.) between February and April 2018. The researcher who conducted the in-depth interviews was a Belgian Spanish-speaking cisgender woman from a Latin-American background, which created a feeling of familiarity without actually being part of the transgender sex worker community, and as such proved to be very useful for the data collection. Recruitment for the in-depth interviews was conducted in the same way as for the face-to-face survey interviews. An interview with the peer expert was conducted after the data collection and analyses for feedback on the results. Written informed consent was obtained from all survey and interview participants. Pseudonyms were chosen for the interview participants to ensure privacy. Spanish in-depth interviews were transcribed, translated, and coded in Dutch.

Of the 65 transgender sex workers working in the Antwerp red light district that were contacted during the outreach phase for the quantitative survey, 46 persons agreed to participate in the face-to-face survey. Fifteen transgender sex workers were contacted for the additional in-depth interviews, of which nine agreed to participate. Some of them already participated in the survey. Reasons for dropout were distrust of researchers, which is common among sex workers (Sanders, 2006b), and the sex worker having a client at the moment of the recruitment or the appointment. An incentive with a value of 20€ was provided for all transgender sex workers who participated in the study.

Measures

For the face-to-face survey, a questionnaire was developed by the research team. The questionnaire was first reviewed by the outreach organizations and tested by two key informants of the population, and translated in Spanish after adjustments were made. Sociodemographic measures included age, educational level, country of origin, current nationality, legal gender, permission of permanent residence, and having a health insurance. Gender identity was measured with the options: (1) female, (2) between male and female, (3) sometimes male, sometimes female, and (4) male. This classification was chosen in correspondence with the outreach organizations, to be understandable for all participants and match their lived experiences, because the cultural conceptualization of gender(identity) might vary. Information about past gender-affirming hormone use included age at first use, continuity of past hormone use, where the hormones were obtained, whether there was medical supervision, and whether hormonal treatment was ever interrupted or stopped due to complications. Highest dose ever, brand name, duration of past hormone use, and possible complications were open-ended questions that were coded later on by one of the researchers (J.V.S.).. To explore present gender-affirming hormone use brand names and doses were asked as open-ended questions that were coded later on by the researcher in the same way as for past hormone use. Questions on present hormone use also included where the current hormonal treatment was obtained, whether there was medical supervision for this treatment and whether the participant was taking additional hormones without medical supervision. Information about silicone injections included having had silicones injected (yes/no), in what zones of the body, by who, where and when the silicones were injected, and what complications had manifested itself, of any. All of these

questions were open ended and coded later on. For sexual health, condom use during work and ever been diagnosed with one of the following sexually transmitted diseases (STD) was asked: Hepatitis B, Hepatitis C, HIV, Chlamydia, genital/anal warts, genital/anal herpes, Gonorrhea or Syphilis. General health was measured using the Minimal European Health Module (Cox et al., 2009). To conclude, experiences with transgender healthcare (doctor and/or psychotherapist), need for medical assistance or healthcare, having questions about hormone therapy and obstacles to healthcare were asked.

For the in-depth interviews, a semi-structured topic list was used based on the analysis of the quantitative survey data, covering the topics past and present hormone use, sex work, migration trajectory, discrimination experiences, and gender identity experiences.

Data analysis

Survey data was analyzed using IBM SPSS statistical software version 24 (SPSS Inc., Chicago, IL). Descriptive analyses were used to describe the socio-demographic characteristics of the study population, their past and present hormone use, their silicone use, and sexual risk. Qualitative data was transcribed ad verbatim. Because of the exploratory nature of the study, qualitative analysis was based on grounded theory (Glaser, Strauss, & Strutzel, 1968), in which data collection and analysis are alternated as themes and concepts emerge out of the data. The in-depth interviews were double coded during and after the data collection process by two researchers independently (A.S. & J.V.S.) to result in one coding scheme, and analyzed using Nvivo Pro 11 software. Quotes are used where possible to illustrate the findings; however, because of the primary focus on hormone use for the outreach organizations, topics such as silicone use and sexual health were not explored extensively during the in-depth interviews.

Results

Socio-demographic characteristics

All survey participants were assigned male at birth and had a history of using gender-affirming hormones (as required to participate). Of all transgender sex workers in the survey sample, 83% self-identified as female and 43.5% had legally changed their gender. One person identified as male: this person self-identified as a cross-dresser and had a history of hormone use. Of all survey participants 76% were from Latin-American origin, most of them born in Ecuador (61%). Of all survey participants, 44% had the Spanish nationality and 17% had the Belgian nationality. The survey showed that 37% of all participants had a permission for permanent residence in Belgium. However, 30% of all participants traveled internationally for sex work and as such did not reside permanently in Belgium, or did not live in Belgium at all. All sociodemographic characteristics of the survey sample are summarized in Table 1.

All of the nine interview participants were assigned male at birth and identified as female.

Table 1. Characteristics of the survey sample of transgender sex workers ($N = 46$).

Socio-demographic variables	*n*	%
Gender identity[a]		
Female	38	83
Between male and female	5	11
Sometimes male, sometimes female	2	4
Male	1	2
Age: mean = 44.46; SD = 8.65		
Education		
Primary education	15	33
Lower secondary education	8	17
Higher secondary education	17	37
Post-secondary non-universitary education	3	6.5
University	3	6.5
Country of origin		
Ecuador	28	61
Belgium	5	11
Colombia	3	6.5
Spain	2	4
Other: Bolivia, Italy, Panama, Peru, Romania, Russia, Venezuela, the Netherlands	8	17
Current nationality		
Spanish	20	44
Belgian	8	17
Ecuadorian	7	15
Spanish/Colombian	2	4
Spanish/Ecuadorian	2	4
Dutch	2	4
Other: Ecuadorian/Dutch, Italian, Panamanian, Romanian, Russian	5	11
Permission for permanent residence in Belgium (yes)	17	37
Health insurance		
No health insurance	4	9
In Spain	16	36
In Belgium	16	36
In Ecuador	3	7
In another country: France, Italy, Russia, Colombia, the Netherlands	5	11

Center for Sexology and Gender; Center for Research for Research on Culture and Gender instead of Dep of Languages and Cultures.

Table 2. Characteristics of the in-depth interview participants ($N = 9$).

Name[a]	Age	Gender ID	Origin	Living in	Migration path
Marina	45	Female	Spain	Antwerp	ES > NL > BE
Monica	53	Female	Ecuador	Antwerp	EC > FR > ES > BE
Brenda	41	Female	Belgium	Antwerp	–
Julia	52	Female	Ecuador	Antwerp	EC > DE > ES > BE
Karmen	42	Female	Ecuador	Antwerp	EC > IT > FR > ES > NL > BE
Kristina	54	Female	Ecuador	Amsterdam (NL)	EC > FR > ES > NL
Kimberly	46	Female	Ecuador	Amsterdam (NL)	EC > NL
Jasmine	40	Female	Ecuador	Brussels	EC > ES > BE
Terry	43	Female	Ecuador	Malaga (ES)	EC > FR > ES

[a]Pseudonyms are used to protect privacy. ES: Spain; NL: the Netherlands; BE: Belgium; EC: Ecuador; FR: France; DE: Germany; IT: Italy.

Of the nine interview participants, seven were from Ecuadorian origin. Furthermore, six of them had lived in Spain. A variety of migration pathways is found among the interview participants, with the Netherlands, France, Germany, Italy, and Spain mentioned as first destination countries. Table 2 shows migration pathways for all interview participants. Migration often happened with help from friends already living in the destination country, like Kimberly, a 46-year old Ecuadorian transgender sex worker, cites: "*it is like a chain (cadena) because almost all of us travelled here in the same way [with help from a friend]*". The economic crisis in Spain is cited by a lot of the interview participants as the reason for eventually migrating to Belgium or the Netherlands. All interview participants worked in the Antwerp red light district, but four of them did not live in Antwerp: two of them were living in Amsterdam (NL) but work in Antwerp because they had to pay taxes to work in the Amsterdam red light district. One participant lived in Spain and occasionally traveled to Antwerp to work, and one participant lived in Brussels and also worked in Brussels in street-based sex work. Socio-demographic characteristics of the interview participants are summed up in Table 2.

Hormone use

For the survey participants, mean age of starting hormone treatment was 20 years [standard deviation (SD)=20.27] and 60% was under 18 years when initiating gender-affirming hormone use. Hormone use was not continuous in 18% of all survey participants. Almost half of the survey participants (46%) has ever stopped or interrupted hormonal treatment because of perceived complications. Complications cited were depression and mood swings, weight gain, and erection problems.

Half of the survey sample (49%) was still using gender-affirming hormones at the time of the data collection. A variety of brand names and doses is found in the survey sample, in the past as well as in the present. The use of ethinylestradiol (Diane 35®) appeared to be most popular among the survey participants, in the past as well as in the present, followed by cyproterone acetate (Androcur®). Furthermore, a lot of the transgender sex workers in the survey sample cited injectable estrogens which are not available in Western Europe. All gender-affirming hormones used in the past and in the present are listed in Table 3.

Twenty-four percent of all survey participants obtained gender-affirming hormones via friends in the past. Only one participant had ever obtained hormones online. Some of the interview participants confirm that information about gender-affirming hormones as well as the products themselves are indeed frequently obtained from friends, as Jasmine, a 40-year old sex worker from Ecuador, states: "*I took whatever the girls gave me that would make me more feminine. I started with Diane35®. I also took Primogyn®. That helped me a lot to become more feminine. Look at me now, such a doll!*". Julia, a 52-year old sex worker, also explains: "*when I first saw travesti [word used by the participant to refer to transgender persons] who had tits, I asked them how they did that. They gave me the name of the hormones and I started taking them*". The in-depth interviews show that some Ecuadorian transgender sex workers working in Antwerp bring hormones for themselves and friends when they travel to Ecuador. Marina, a 45-year

Table 3. Past ($N = 46$) and present ($N = 22$) gender affirming hormone use.

Brand name	Mode of administration composition	Past, *N* (%)	Highest dose ever	Present, *N* (%)	Current dose
Diane 35®	*Tablet Cyproterone acetate (2 mg) and Ethinylestradiol (35 μg)*	19 (41%)		7 (15%)	
		14	1/day	3	1/day
		2	3/day	2	2/day
		1	4/day	1	1/week
		1	1/week	1	7–9/week
		1	10/week		
Androcur®	*Tablet Cyproterone acetate (50 mg)*	15 (33%)		3 (6.5%)	
		11	1/day	2	1/day
		1	1/week	1	1/month
		1	2/day		
		2	N.S.		
Topasel® Perlutan®	*Injection Estradiol enanthate (10 mg) and Algestone (150 mg)*	6 (13%)		2 (4%)	
		2	1/week	1	1/2 weeks
		2	1/day	1	1/2 months
		1	1/month		
		1	N.S.		
Progynon® Depot	*Injection Estradiol valerate (10 mg)*	6 (13%)			
		1	3/week		
		1	2/week		
		1	15/week		
		3	N.S.		
Gravidinona®	*Injection Estradiol valerate (5 mg) and Hydroxyprogesteron (250 mg)*	4 (9%)			
		1	3/day		
		1	2/week		
		1	1/week		
		1	1/month		
Primogyn® Depot	*Injection Estradiol (10 mg)*	4 (9%)			
		1	3/day		
		1	3/week		
		1	1/week		
		1	2/month		
Progynova®	*Tablet Estradiol valerate (2 mg)*	2 (4%)			
		1	5/day		
		1	1/day		
Oestrogel®	*Transdermal gel Estradiol (0.6 mg/g)*				
		1	N.S.	1	1/3 days
Premarin®	*Tablet Conjugated estrogens*				
		1	N.S.		
Primosiston®	*Injection Composition depends on country*				
		1	3/month		
Gynaecosid®	*Tablet (abortion pill) Methyloestrenolone (5 mg) and methyloestradiol (0.3 mg)*	1	1/day		
Systen®	*Transdermal patch Estradiol (0.6 mg/g)*				
				1	1/day
Depo-provera®	*Injection Medroxyprogestron acetate (150 mg)*				
				1	1/month
Combinations					
Diane 35® and Androcur®	*Cyproterone (2 mg)+Ethinylestradiol (35 μg) and Cyproterone acetate (50 mg)*			1	1 co D/day + 1 co A/week
Progynova® and Androcur®	*Estradiol valerate (2 mg) and cyproterone acetate (50 mg)*			2	2 co P/day + 2 co A/week
Not further specified					
"Estrogens"		5	N.S.		
"Estradiol"		4	N.S.	1	1/3 days
				1	2/week
				1	5 mg/day
				1	3/day
"Progesteron"		1	1 inj/month		

N.S.=not specified.

old sex worker from Spain, explains that gender-affirming hormones are cheap and easily available over the counter in pharmacies in Ecuador, and once back in Europe sold to friends for 10 times the price: "*In Ecuador it [Topasel®] costs 1 dollar, but in Europe it is no longer available. Some of them bring it when they come back from holidays, or let family or friends bring it to Belgium to sell it here for 20 euros*". Of all survey participants currently still using gender-affirming hormones, 64% obtains them from a physician, although it was not specified if this doctor had expertise in providing transgender health care.

Almost half of the survey participants (48%) had no medical supervision for their hormone use in the past. Reasons cited were no medical assistance available, the doctor having no knowledge about gender-affirming hormones, getting hormones and information from friends, and financial hardship. Current uncontrolled hormone use rate was 32% of the total survey sample or 68% of all participants still using gender-affirming hormones. Two participants mentioned uncontrolled hormone use in addition to their medically controlled hormone use. During the in-depth interviews, it appeared that, even if a gender-affirming hormonal treatment is prescribed by a doctor, a lot of the participants do not take the hormones regularly. One of the reasons cited for this by the interview participants is that gender-affirming hormones frequently cause erectile dysfunction, although an erection is often required when engaging in transgender sex work. All interview participants who did not underwent a vaginoplasty cite having to engage in penetrating sex with their penis, and stress the importance of being able to maintain an erection. Brenda, a 41-year old Belgian sex worker explained for instance how she adjusts her gender-affirming hormone treatment herself to be able to still have an erection: "*I need it [my penis] for my work… […] One month I use estrogel®, the next month I don't, and so on. I apply it in the morning and in the evening, I do not apply the recommended dose […] although they [the hormones] are always prescribed.*" Another participant elaborated on how she takes high doses of gender-affirming hormones when on vacation in Ecuador because she does not engage in sex work while there, and stops hormone treatment when back in Antwerp, because she has to be able to perform during sex work. Other interview participants held certain beliefs about hormone use: one respondent for instance believed gender-affirming hormones are no longer effective after a certain age, and two others cite only taking gender-affirming hormones when having an orgasm with their "male" body part, in order to stay female and "in balance".

Feminization surgery

A variety of surgical procedures to feminize the body is found among the survey participants, summed up in Table 4. Of all survey participants, 83% had breast augmentation. Half of these breast augmentations were performed in Spain, 18% in Ecuador, and 13% in Belgium. Participants also cited facial feminization surgery (FFS, 56%), silicone implants in the buttocks (46%), and liposuction (33%). Furthermore, seven participants had undergone vaginoplasty (15%). Of all survey participants that have had a genital gender-affirming surgery, three indicate currently not following gender-affirming hormone therapy.

Of the interview participants, only one had undergone vaginoplasty. Two of the interview participants stated thinking about genital surgery, but most of them explicitly stated not wanting

Table 4. Hormone use, surgery, silicone injections and sexual health in the survey sample ($N = 46$).

Hormone use	*N* (%)
Hormone use not continuous	8 (18)
Duration of hormone use ($n = 41$)	
Less than a year	5 (12)
1–5 years	14 (34)
5–10 years	12 (29)
Over 10 years	10 (24)
Ever stopped hormonal treatment because of complications	21 (46)
Complications	
Depression/mood swings	8 (17)
Weight gain	6 (13)
Erection problems	5 (11)
Current hormone use (yes)	22 (49)
Uncontrolled hormone use	
Past	22 (48)
Present	15 (32)
Hormones obtained via friends	24
Surgery	*N* (%)
Breast augmentation	38 (83)
Facial feminization surgery (FFS)	25 (56)
Silicone implants in the buttocks	21 (46)
Liposuction	15 (33)
Vaginoplasty	7 (15)
Silicone injections	*N* (%)
Silicone injections	30 (65)
Buttocks	20 (43.5)
Legs	17 (37)
Face (forehead, jawbones or cheekbones)	11 (24)
Hips	5 (11)
Breasts	2 (4)
Performed by	
A transgender friend	16 (53)
A doctor	13 (43)
A nurse	1 (2)
Themselves	1 (2)
Complications	13 (43)
Sexual health	*N* (%)
Inconsistent condom use at work	15 (33)
Ever diagnosed with one or more STD (self-reported)	43 (73)
Gonorrhea	14 (31)
Syphilis	14 (31)
Hepatitis B	6 (13)
Chlamydia	5 (11)
Genital/anal herpes	5 (11)
Hepatitis C	4 (9)
Genital/anal warts	3 (7)
HIV	4 (9)

this procedure. Some of them voiced a fear of loss of sexual pleasure and stated liking to penetrate. Keeping their penis is seen by these participants as a deliberated choice that does not make them less female, as stated by Marina, a 45-year old sex worker from Spain: "*I am female in all aspects and ways, I just also like to penetrate. I accept myself as I am. What is between my legs is my own business.*" Furthermore, some interview participants also cited that because of their penis, they can offer a special service that attracts a specific clientele, and allows them to ask more money than cisgender female sex workers, as Jasmine, a 40-year old sex worker from Ecuador indicates: "*We are special, we are the forbidden sex. Men cannot get what we offer if they do not pay for it. All men would want someone like us at home, we are the dolls that have something special.*"

Silicone injections

Of all survey participants, 65% has had silicone injections. Most of the survey participants that had silicone injections were from Latin-American origin (93%), and most of the silicones were injected in Ecuador (53%), followed by Spain (27%), between 1990 and 2014. More than half of these silicones (53%) were injected by a (transgender) friend who is not medically trained for these procedures. Of the survey participants having had silicone injections, 43% cites health problems attributed to these silicones, such as pain in the back, hips, buttocks or legs, skin problems, inflammations, and migration and deformation of the silicones afterwards.

Sexual health

Of all survey participants, 73% self-reported ever been diagnosed with one or more STD. Four respondents report being HIV positive (9%). A third of all survey participants does not always use condoms for sex work, and states that this depends on the price, the client looking hygienic or handsome or the act. Oral sex is for instance frequently performed without condom.

Need for healthcare

Of all participants in the survey sample, 83% described their general health as (very) good, and 70% stated no need for healthcare. However, 28% stated having questions about gender-affirming hormone use and 22% voiced a need for psychological support. Barriers for (transgender specific) healthcare that are voiced by the survey participants are the doctors' attitude, the need to travel, not speaking Dutch and having no health insurance. Most of the participants did have a health insurance (91%), of which 36% in Belgium and 36% in Spain. Some interview participants stated that they had sought psychological support in the past, but that this had been focused on making them accept their birth-assigned gender, which resulted in an overall distrust in psychotherapists. Monica, a 53-year old sex worker from Ecuador, states for instance: "*I went to another city to study medicine. I had a few appointments with a psychologist of the university, but he tried to change me and encouraged me to try relationships with girls*". Brenda, a 41-year old sex worker from Belgium, had the same experience: "*She kept on saying 'are you sure you want this' […] she had the intention to convince me to not do the transition*".

Discussion

This study is one of the first exploring sociodemographic characteristics and health risk behaviors of a population of transgender sex workers from a European context. This population of transgender sex workers working in and around the Antwerp red light district appears to be a very specific population with distinct characteristics. First of all, most of them are immigrants: only 11% of the sample was of Belgian origin: this is significantly lower than the proportion of native transgender sex workers in the Spanish (Ballester-Arnal et al., 2018) and Portuguese (Gama et al., 2018) studies, respectively 46,4% and 56.3%. Moreover, this sample existed mainly of Latin-American transgender women: 76% was from Latin-American descend, and 61% was born in Ecuador. Similar findings have been reported by Janssen (2007) and the

European Network for HIV/STI prevention and Health Promotion among Migrant Sex Workers (TAMPEP, 2009), who report that a majority of transgender sex workers in Europe comes from Latin American countries (Janssen, 2007; TAMPEP, 2009). The proportion of sex workers from Latin American countries is much smaller in the general sex worker population in Antwerp: around 5% of the total sex worker population working in Antwerp is from Latin-American descend (Van Nunen, Gryseels, & Van Hal, 2012).

A significant proportion of the transgender sex workers in this study have lived and worked in Spain, and 44% has the Spanish nationality. However, assuming a single migration path from Ecuador over Spain to Belgium or the Netherlands is too simplistic: a great variety of migration pathways is mentioned. Moreover, working in the red light district of Antwerp does not necessarily mean living in Antwerp or even in Belgium: there seems to be a lot of mobility: 30% of all survey participants cite traveling internationally for work and four out of nine interview participants did not live in Antwerp. Only 37% of the survey sample has a permanent residence permit for Belgium, which has off course important consequences for their access to health care in Belgium.

Transition-related risk behaviors

A lot of the transgender sex workers in this study do not follow regular gender-affirming hormone regimens for transgender persons described in the guidelines of the Endocrine Society (Hembree et al., 2017). Uncontrolled hormone use appeared to be very prevalent in this population: 32% of the survey participants who are currently still using gender-affirming hormones does this without medical supervision or regular checkup. A wide variety of brand names and doses is found, in which the use of Diane 35®, which contains the synthetic estrogen ethinylestradiol and antiandrogen cyproterone acetate, is specifically remarkable. The use of ethinylestradiol is not recommended for transgender women because of the association with venous thrombosis (Asscheman et al., 2014; Gooren, Wierckx, & Giltay, 2014; Toorians et al., 2003), but seems to be used frequently by this population, in the past as well as in the present. Also, the use of injectable estrogens, which are not available in Belgium, and thus are illegally imported, has to be noted. This finding suggests the existence of alternative circuits for obtaining hormonal products, which is further confirmed by some interview participants who mentioned buying gender-affirming hormones in Ecuador over the counter and selling them to friends once back in Europe. Indeed, the gender-affirming hormone treatments cited in this sample of transgender sex workers are often not prescribed by a physician. A quarter of all participants obtained hormones through friends. Earlier reports stated 16.9 and 4.7% prevalence rates of ever having obtained hormones via friends in more general transgender samples in Ontario, Canada (Rotondi et al., 2013) and New York City, USA (Sanchez et al., 2009). As the in-depth interviews suggest, uncontrolled gender-affirming hormone use and auto-medication could be related to the importance of the penis and erection during sex work for transgender sex workers, which often makes them interrupt or adjust their hormone regimens themselves. Not opting for genital gender-affirming surgery is seen as a deliberated choice that does not make them less female, although the penis appears to be an important aspect of their work. Not opting for a vaginoplasty as such could also be seen as a selling strategy for transgender sex workers. However, distrust in healthcare workers and other barriers to regular transgender health care, such as travel distance and language barriers, could also be related to the high rate of uncontrolled hormone use in this population. Past experiences with healthcare workers might have led the transgender sex workers in this sample to distrust physicians and psychologist and rely on their own networks for obtaining information and gender-affirming hormones.

The prevalence of using internet-sourced hormones was found to be very low in this sample of transgender sex workers, in contrast with a 17% prevalence of internet-sourced hormones in a sample of transgender persons attending initial assessment at a transgender health clinic in Nottingham, UK (Mepham et al., 2014). This could be due to limited internet access. The

existing networks for obtaining gender-affirming hormones might also be well-known among the transgender sex workers working in the Antwerp red light district, which might make buying internet-sourced hormones unnecessary.

A variety of surgical procedures to feminize the body is mentioned among the survey participants, that are considered safe options for feminization if performed following WPATH Standards of Care 7 for the Health of Transgender and Gender-nonconforming persons (Coleman et al., 2012). However, more than half of the survey sample (65%) has silicone injections in one or more parts of the body, a practice that should be discouraged according to transgender health care specialists (Ettner et al., 2016). This seems considerably higher than the 16.7% prevalence of filler use found among transgender women in a population-based sample in San Francisco, USA (Wilson et al., 2014). As financial disadvantage is an important factor for transgender women to engage in the sex industry (Nadal et al., 2014), this high prevalence of silicone injections could also be related to their disadvantaged status in society. Since most of the injections took place between the years 1990 and 2000, it is unclear if this practice is still prevalent today and if this is (still) performed in Antwerp. However, having silicone injections has major consequences and complications can still arise years after the silicones were injected, which means these can still cause adverse health outcomes up until today (Chasan, 2007; Styperek et al., 2013). Furthermore, injecting hormones and silicones could pose additional health risks related to needle sharing, though it is not known from the current data if transgender sex workers in this sample engage in this kind of risk behavior.

Sexual health

Inconsistent condom use with clients was reported by a third of all survey participants. Two thirds of the sample had ever been diagnosed with one or more STD, and 9% ($n = 4$) self-reported being HIV positive. Though these data are limited, HIV prevalence seems to be lower than HIV prevalence estimated in previous studies in Jamaica (Logie et al., 2017), San Francisco, USA (Sugano, Nemoto, & Operario, 2006) and Shenyang, China (Cai et al., 2016), all using self-reported data in samples of transgender sex workers (respectively 29, 26, and 17%). A recent Portuguese study reported a self-reported HIV prevalence of 14.9% in a sample of 121 transgender sex workers (Gama et al., 2018). The variation in these findings suggests that HIV prevalence rates cannot be generalized, even among samples of transgender sex workers, and that global HIV prevalence rates for transgender persons should be interpreted with caution.

Implications for policy and health care

Research shows that because of discrimination on the labor market, some transgender women have to turn to the sex industry to survive (Crosby & Pitts, 2007; Lindroth, Zeluf, Mannheimer, & Deogan, 2017; Nadal et al., 2014; Sausa et al., 2007). Financial necessity could be an important reason for transgender women to engage in sex work, and financial problems might as such be an important reason for these women to turn to alternative transition options such as silicone injections or auto-medication. In order to lower this risk behavior, discrimination of transgender persons and access to healthcare and social services should be addressed. Although most participants do state having a health insurance, only 36% has a health insurance in Belgium. To qualify for transgender health care coverage, transgender sex workers living and working in Antwerp would need a Belgian health insurance. Given the mobility of some transgender sex workers in this study, who sometimes not even live in Antwerp or Belgium, this is not evident. In some European countries, as in Belgium, the social and legal position for transgender persons has improved a lot over the past years, having attained legal gender recognition without medical requirements, legal protection taken up in anti-discrimination laws, and a lot of transgender healthcare options reimbursed by health insurance (ILGA Europe, 2018). However, some groups of transgender persons cannot claim these rights, and the importance of language and citizenship status as additional barriers to healthcare and employment should be stressed here.

It is recommended that organizations providing healthcare and assistance for sex workers are educated about transgender issues and healthy options for transition as described by the World Professional Association for Transgender Healthcare (WPATH) standards of care (Coleman et al., 2012) and the guidelines for gender-affirming hormonal treatment of the Endocrine Society (Hembree et al., 2017), in order to give accurate information to transgender sex workers about gender-affirming hormone therapy, silicone injections, and other transition-related health risk behaviors. The possibility of following up hormone therapy by a doctor at the sex worker service center facilities to make healthcare more accessible for transgender sex workers should be explored. As also stressed by Gama et al. (2018), health interventions that are culturally sensitive and tailored to the needs of transgender sex workers are necessary to effectively address the needs of this vulnerable population. These should take their distinct characteristics, situation, needs, and beliefs into account, as they differ from the general population of sex workers in Antwerp and from the general population of transgender persons in Belgium. Furthermore, a greater understanding of the situation of vulnerable groups within the transgender population, such as sex workers, their healthcare needs, and the barriers to healthcare they face is necessary for transgender healthcare providers. Evidently, more research should further explore and entangle the complex intertwining of intersections of gender, ethnicity, socio-economic status and others, as well as their associated health risks for transgender sex workers in European context.

Limitations

This study, though limited in sample size, is one of the first providing insights in the transition-related health risk behaviors of a population of transgender sex workers in Europe. However, as all participants were required to have used gender-affirming hormones in the past, this sample is not representative for the total population of transgender sex workers in Antwerp. Transvestite/cross-dresser sex workers who have never used hormones are for instance not included in this sample. The composition of the total population of transgender sex workers in Antwerp remains thus unknown. Also, because of the collaboration with the outreach organizations, most transgender sex workers in the sample were window-based sex workers working in the red light district area in Antwerp ("Schipperskwartier"). It is unclear if transgender persons are also active in other sectors of the sex industry. Research indicates that transgender women are also engaging in sex work online (Botti & D'Ippoliti, 2017; Moorman & Harrison, 2016). Further research should investigate whether the socio-demographic characteristics and risk behaviors of transgender persons involved in online sex work differs from this sample of transgender sex workers.

Because of the exploratory nature of the study, some parts of the questionnaire appeared to be unclear. For instance, the possibility that gender-affirming hormones were obtained abroad was initially not considered, but appeared to be an important factor in mapping the hormone use practices of this sample of transgender sex workers. In the future, some questions should be altered to match the lived reality of transgender sex workers. Also, past hormone use data was self-reported and given the mean age being relatively old and the mean age at first use appearing very young, for a lot of transgender sex workers in this sample the use of these hormones could have taken place over a span of more than 10 years, which is a long time to remember specific brand names and doses. Furthermore, some participants cited several brand names of gender-affirming hormones, but it was not registered whether these were taken at the same time or during different periods. More detailed research is needed to investigate gender-affirming hormone use practices.

When researching sex workers, the use of third party involvement such as key informants, peer experts, and outreach organizations that have gained trust of the studied population is common (Sanders, 2006a, 2006b) and without these reaching participants would have been impossible. Data collection conducted by a peer expert having an insider perspective and a Spanish-speaking researcher from a Latin-American background proved to be very beneficial to break down barriers to participate in research for this hard-to-

reach and understudied population, not only with regard to language and cultural understanding, but also in terms of gaining trust. However, involving the peer expert in the quantitative as well as the qualitative data collection could have resulted in a selection effect, only selecting transgender sex workers they already knew or thought would be willing to participate.

Finally, data on sexual health in this study is limited, as HIV status and STD prevalence are self-reported. The meta-analysis of Herbst et al. (2008) showed that for studies using self-reported data on HIV status in transgender women, HIV prevalence was only 11.8%, whereas for studies using HIV testing data, HIV prevalence was 27.7%, (Herbst et al., 2008). Hence, HIV prevalence in this sample is likely to be an underestimation. However, data on HIV prevalence in transgender persons in general as well as in transgender sex worker populations completely lacks in Belgium, and in Europe this kind of research also remains scarce. As such, this study could provide some valuable first insights in the risk behavior of a population of transgender sex workers in a European context. Research using test data is required to further investigate and confirm HIV prevalence in subpopulations of the transgender population that might be at higher risk, as well as in the broader transgender population.

Conclusion

This study explored the transition-related risk behaviors of a nonrandom subpopulation of both transgender and sex worker populations, that has been largely invisible for research but appears highly vulnerable for several health risks. Uncontrolled gender-affirming hormone use and silicone injections, as well as inconsistent condom use, appear to be highly prevalent in this sample of transgender sex workers, which poses them at risk for adverse health outcomes. When addressing the health of this population, their specific sociodemographic characteristics, their gender identity and their social situation should be accounted for. Access to health care and social services should be ensured, and culturally tailored health interventions that take into account their social context and gender identity should be developed.

Disclosure statement

No potential conflict of interest was reported by the authors.

Acknowledgments

The authors thank Cosmin Morari, Veerle Doossche, Caroline Mannaerts and Katleen Peleman of Ghapro, and Jasper Kerremans of Boysproject for their involvement in the data collection for this study. The study has been conducted in accordance with the ethical standards as laid down in the 1964 Declaration of Helsinki. Ethical approval for the study was obtained from the Ghent University Hospital Ethical Committee in Ghent, Belgium.

ORCID

Joz Motmans http://orcid.org/0000-0001-7643-4153
Justine Defreyne http://orcid.org/0000-0002-6570-2340
Guy T'Sjoen http://orcid.org/0000-0003-0457-9673

References

Asscheman, H., T'Sjoen, G., Lemaire, A., Mas, M., Meriggiola, M. C., Mueller, A., … Gooren, L. J. (2014). Venous thrombo-embolism as a complication of cross-sex hormone treatment of male-to-female transsexual subjects: A review. *Andrologia*, *46*(7), 791–795. doi:10.1111/and.12150

Ballester-Arnal, R., Bergero-Miguel, T., Gil-Llario, M. D., Guzman-Parra, J., & Castro-Calvo, J. (2018). Transgender sex work in Spain: Psychosocial profile and mental health. In L. A. Nuttbrock (Ed.), *Transgender sex work and society*. New York: Harrington Park Press.

Baral, S. D., Poteat, T., Stromdahl, S., Wirtz, A. L., Guadamuz, T. E., & Beyrer, C. (2013). Worldwide burden of HIV in transgender women: A systematic review and meta-analysis. *Lancet Infectious Diseases*, *13*(3), 214–222. doi:10.1016/S1473-3099(12)70315-8

Benoit, C., Jansson, M., Millar, A., & Phillips, R. (2005). Community-academic research on hard-to-reach populations: Benefits and challenges. *Qualitative Health Research*, *15*(2), 263–282. doi:10.1177/1049732304267752

Botti, F., & D'Ippoliti, C. (2017). Sex work among trans people: Evidence from Southern Italy. *Feminist Economics*, *23*(3), 77–109. doi:10.1080/13545701.2016.1177656

Cai, Y., Wang, Z. X., Lau, J. T. F., Li, J. H., Ma, T. C., & Liu, Y. (2016). Prevalence and associated factors of condomless receptive anal intercourse with male clients among transgender women sex workers in Shenyang, China. *Journal of the International Aids Society*, *19*, 26–34. doi:10.7448/ias.19.3.20800

Chasan, P. E. (2007). The history of injectable silicone fluids for soft-tissue augmentation. *Plastic and Reconstrctive Surgery*, *120*(7), 2034–2040, doi:10.1097/01.prs.0000267580.92163.33

Clements-Nolle, K., Marx, R., Guzman, R., & Katz, M. (2001). HIV prevalence, risk behaviors, health care use, and mental health status of transgender persons: Implications for public health intervention. *American Journal of Public Health*, *91*(6), 915–921. doi:10.2105/Ajph.91.6.915

Coleman, E., Bockting, W., Botzer, M., Cohen-Kettenis, P., DeCuypere, G., Feldman, J., … Zucker, K. (2012). Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7. *International Journal of Transgenderism*, *13*(4), 165–232. doi:10.1080/15532739.2011.700873

Cox, B., Van Oyen, H., Cambois, E., Jagger, C., Le Roy, S., Robine, J.-M., & Romieu, I. (2009). The reliability of the minimum European health module. *International Journal of Public Health*, *54*(2), 55–60. doi:10.1007/s00038-009-7104-y

Crosby, R. A., & Pitts, N. L. (2007). Caught between different worlds: How transgendered women may be "forced" into risky sex. *Journal of Sex Research*, *44*(1), 43–48. doi:10.1080/00224490709336791

De Koster, M. (2017). Prostitution in Antwerp. In J.-M. Chaumont, M. Rodriguez Garcia, & P. Servais (Eds.), *Trafficking in women 1924-1926: The Paul Kinsie reports for the League of Nations* (Vol. II). Geneva: United Nations Publications.

Ettner, R., Monstrey, S., & Coleman, E. (2016). *Principles of transgender medicine and surgery*. New, NY: Routledge.

Gama, A., Martins, M. R. O., Mendao, L., Barros, H., & Dias, S. (2018). HIV Infection, risk factors and health services use among male-to-female transgender sex workers: A cross-sectional study in Portugal. *Aids Care-Psychological and Socio-Medical Aspects of AIDS/HIV*, *30*(1), 1–8. doi:10.1080/09540121.2017.1332736

Garofalo, R., Deleon, J., Osmer, E., Doll, M., & Harper, G. W. (2006). Overlooked, misunderstood and at-risk: Exploring the lives and HIV risk of ethnic minority male-to-female transgender youth. *Journal of Adolescent Health*, *38*(3), 230–236. doi:10.1016/j.jadohealth.2005.03.023

Glaser, B. G., Strauss, A. L., & Strutzel, E. (1968). The discovery of grounded theory; strategies for qualitative research. *Nursing Research*, *17*(4), 364. doi:10.1097/00006199-196807000-00014

Gooren, L. J., Wierckx, K., & Giltay, E. J. (2014). Cardiovascular disease in transsexual persons treated with cross-sex hormones: Reversal of the traditional sex difference in cardiovascular disease pattern. *European Journal of Endocrinology*, *170*(6), 809–819. doi:10.1530/EJE-14-0011

Guadamuz, T. E., Wimonsate, W., Varangrat, A., Phanuphak, P., Jommaroeng, R., McNicholl, J. M., … van Griensven, F. (2011). HIV prevalence, risk behavior, hormone use and surgical history among transgender persons in Thailand. *Aids and Behavior*, *15*(3), 650–658. doi:10.1007/s10461-010-9850-5

Harcourt, C., van Beek, I., Heslop, J., McMahon, M., & Donovan, B. (2001). The health and welfare needs of female and transgender street sex workers in New South Wales. *Australian and New Zealand Journal of Public Health*, *25*(1), 84–89. doi:10.1111/j.1467-842X.2001.tb00556.x

Hembree, W. C., Cohen-Kettenis, P. T., Gooren, L., Hannema, S. E., Meyer, W. J., Murad, M. H., … T'Sjoen, G. (2017). Endocrine treatment of gender-dysphoric/gender-incongruent persons: An Endocrine Society clinical practice guideline. *Journal of Clinical Endocrinology & Metabolism*, *102*, 3869–3903. doi:10.1210/jc.2017-01658

Herbst, J. H., Jacobs, E. D., Finlayson, T. J., McKleroy, V. S., Neumann, M. S., & Crepaz, N. (2008). Estimating HIV prevalence and risk behaviors of transgender persons in the united states: A systematic review. *Aids and Behavior*, *12*(1), 1–17. doi:10.1007/s10461-007-9299-3

ILGA Europe. (2018). *Rainbow Europe index*. Retrieved from https://www.ilga-europe.org/resources/rainbow-europe/rainbow-europe-2018

Janssen, M.-L. (2007). *Reizende sekswerkers: Latijns-Amerikaanse vrouwen in de Europese prostitutie*. Amsterdam: Het Spinhuis.

Lindroth, M., Zeluf, G., Mannheimer, L. N., & Deogan, C. (2017). Sexual health among transgender people in Sweden. *International Journal of Transgenderism*, *18*(3), 318–327. doi:10.1080/15532739.2017.1301278

Logie, C. H., James, L., Tharao, W., & Loutfy, M. R. (2011). HIV, gender, race, sexual orientation, and sex work: A qualitative study of intersectional stigma experienced by HIV-positive women in Ontario, Canada. *PLoS Medicine*, *8*(11), e1001124. doi:10.1371/journal.pmed.1001124

Logie, C. H., Wang, Y., Lacombe-Duncan, A., Jones, N., Ahmed, U., Levermore, K., … Newman, P. A. (2017). Factors associated with sex work involvement among transgender women in Jamaica: A cross-sectional study. *Journal of the International Aids Society*, *20*, 21422. doi:10.7448/ias.20.1.21422

Mepham, N., Bouman, W. P., Arcelus, J., Hayter, M., & Wylie, K. R. (2014). People with gender dysphoria who self-prescribe cross-sex hormones: Prevalence, sources, and side effects knowledge. *Journal of Sexual Medicine*, *11*(12), 2995–3001. doi:10.1111/jsm.12691

Meriggiola, M. C., & Gava, G. (2015). Endocrine care of transpeople part II. A review of cross-sex hormonal treatments, outcomes and adverse effects in transwomen. *Clinical Endocrinology*, *83*(5), 607–615. doi:10.1111/cen.12754

Moorman, J. D., & Harrison, K. (2016). Gender, race, and risk: Intersectional risk management in the sale of sex online. *The Journal of Sex Research*, *53*(7), 816–824. doi:10.1080/00224499.2015.1065950

Nadal, K. L., Davidoff, K. C., & Fujii-Doe, W. (2014). Transgender women and the sex work industry: Roots in systemic, institutional, and interpersonal discrimination. *Journal of Trauma & Dissociation*, *15*(2), 169–183. doi:10.1080/15299732.2014.867572

Nemoto, T., Iwamoto, M., Perngparn, U., Areesantichai, C., Kamitani, E., & Sakata, M. (2012). HIV-related risk

behaviors among kathoey (male-to-female transgender) sex workers in Bangkok, Thailand. *Aids Care-Psychological and Socio-Medical Aspects of AIDS/HIV*, *24*(2), 210–219. doi:10.1080/09540121.2011.597709

Nuttbrock, L., Bockting, W., Rosenblum, A., Hwahng, S., Mason, M., Macri, M., & Becker, J. (2014). Gender abuse, depressive symptoms, and substance use among transgender women: A 3-year prospective study. *American Journal of Public Health*, *104*(11), 2199–2206. doi:10.2105/AJPH.2014.302106

Nuttbrock, L., & Hwahng, S. (2017). Ethnicity, sex work, and incident HIV/STI among transgender women in New York city: A three year prospective study. *Aids and Behavior*, *21*(12), 3328–3335. doi:10.1007/s10461-016-1509-4

Nuttbrock, L., Hwahng, S., Bockting, W., Rosenblum, A., Mason, M., Macri, M., & Becker, J. (2009). Lifetime risk factors for HIV/sexually transmitted infections among male-to-female transgender persons. *JAIDS-Journal of Acquired Immune Deficiency Syndromes*, *52*(3), 417–421. doi:10.1097/QAI.0b013e3181ab6ed8

Operario, D., Nemoto, T., Iwamoto, M., & Moore, T. (2011). Unprotected sexual behavior and HIV risk in the context of primary partnerships for transgender women. *Aids and Behavior*, *15*(3), 674–682. doi:10.1007/s10461-010-9795-8

Operario, D., Soma, T., & Underhill, K. (2008). Sex work and HIV status among transgender women - Systematic review and meta-analysis. *JAIDS-Journal of Acquired Immune Deficiency Syndromes*, *48*(1), 97–103. doi:10.1097/QAI.0b013e31816e3971

Rotondi, N. K., Bauer, G. R., Scanlon, K., Kaay, M., Travers, R., & Travers, A. (2013). Nonprescribed hormone use and self-performed surgeries: "Do-it-yourself" transitions in transgender communities in Ontario, Canada. *American Journal of Public Health*, *103*(10), 1830–1836. doi:10.2105/AJPH.2013.301348

Sanchez, N. F., Sanchez, J. P., & Danoff, A. (2009). Health care utilization, barriers to care, and hormone usage among male-to-female transgender persons in New York city. *American Journal of Public Health*, *99*(4), 713–719. doi:10.2105/AJPH.2007.132035

Sanders, T. (2006a). Researching sex work: Dynamics, difficulties, and decisions. In D. Hobbs, & R. Wright (Eds.), *The SAGE handbook of fieldwork* (pp. 201–221). Thousand Oaks, CA: SAGE Publications.

Sanders, T. (2006b). Sexing up the subject: Methodological nuances in researching the female sex industry. *Sexualities*, *9*(4), 449–468. doi:10.1177/1363460706068044

Sausa, L. A., Keatley, J., & Operario, D. (2007). Perceived risks and benefits of sex work among transgender women of color in San Francisco. *Archives of Sexual Behavior*, *36*(6), 768–777. doi:10.1007/s10508-007-9210-3

Shaver, F. M. (2005). Sex work research: Methodological and ethical challenges. *Journal of Interpersonal Violence*, *20*(3), 296–319. doi:10.1177/0886260504274340

Styperek, A., Bayers, S., Beer, M., & Beer, K. (2013). Nonmedical-grade injections of permanent fillers: Medical and medicolegal considerations. *The Journal of Clinical and Aesthetic Dermatology*, *6*(4), 22–29.

Sugano, E., Nemoto, T., & Operario, D. (2006). The impact of exposure to transphobia on HIV risk behavior in a sample of transgendered women of color in San Francisco. *Aids and Behavior*, *10*(2), 217–225. doi:10.1007/s10461-005-9040-z

TAMPEP. (2009). *Sex work in Europe: A mapping of the prostitution scene in 25 European countries*. Retrieved from https://tampep.eu/wp-content/uploads/2017/11/TAMPEP-2009-European-Mapping-Report.pdf

Toorians, A., Thomassen, M., Zweegman, S., Magdeleyns, E., Tans, G., Gooren, L., & Rosing, J. (2003). Venous thrombosis and changes of hemostatic variables during cross-sex hormone treatment in transsexual people. *The Journal of Clinical Endocrinology & Metabolism*, *88*(12), 5723–5729. doi:10.1210/jc.2003-030520

Van Nunen, K., Gryseels, C., & Van Hal, G. (2012). *Effectonderzoek naar preventie bij sekswerkers*. Antwerpen: Onderzoeksrapport Universiteit Antwerpen.

Van Schuylenbergh, J., Motmans, J., & Coene, G. (2018). Transgender and non-binary persons and sexual risk: A critical review of 10 years of research from a feminist intersectional perspective. *Critical Social Policy*, *38*(1), 121–142. doi:10.1177/0261018317732478

Wallace, P. M. (2010). Finding self: A qualitative study of transgender, transitioning, and adulterated silicone. *Health Education Journal*, *69*(4), 439–446. doi:10.1177/0017896910384317

Weitzer, R. (2014). The social ecology of red-light districts: A comparison of Antwerp and Brussels. *Urban Affairs Review*, *50*(5), 702–730. doi:10.1177/1078087413504081

Weitzer, R. (2017). Legal prostitution systems in Europe. *Contemporary organized crime* (pp. 47–64). Springer.

Wilson, E. C., Garofalo, R., Harris, R. D., Herrick, A., Martinez, M., Martinez, J., & Belzer, M. (2009). Transgender female youth and sex work: HIV risk and a comparison of life factors related to engagement in sex work. *Aids and Behavior*, *13*(5), 902–913. doi:10.1007/s10461-008-9508-8

Wilson, E., Rapues, J., Jin, H., & Raymond, H. F. (2014). The use and correlates of illicit silicone or "fillers" in a population-based sample of transwomen, San Francisco, 2013. *Journal of Sexual Medicine*, *11*(7), 1717–1724. doi:10.1111/jsm.12558

Winter, S., Diamond, M., Green, J., Karasic, D., Reed, T., Whittle, S., & Wylie, K. (2016). Transgender people: Health at the margins of society. *Lancet*, *388*(10042), 390–400. doi:10.1016/S0140-6736(16)00683-8